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PATENT & TRADEMARK OFFICE

PATENT APPLICATION
Mo-6035
LeA 33,762

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AS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF	
THOMAS ECKEL ET AL	GROUP NO.: 1714
SERIAL NUMBER: 09/720,280	EXAMINER: P A. SZEKELY
FILED: DECEMBER 21, 2000	RESPONSE TO PAPER NO. 11
TITLE: FLAME-RESISTANT THERMOPLASTIC POLYCARBONATE MOLDING COMPOSITIONS CONTAINING PHOSPHAZENES	

APPEAL BRIEF

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TC 1700

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Brief, submitted in triplicate, is an appeal from the Final Office Action of the Examiner dated November 20, 2002 in which the rejection of Claims 2-15, 18, 20, 22 and 23 was maintained.

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 05/20/03
Date
James R. Franks - Reg. No. 42,552
Name of applicant, assignee or Registered Representative
Signature
May 20, 2003
Date

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I. REAL PARTY IN INTEREST

The real party in interest is Bayer AG.

II. RELATED APPEALS AND INTERFERENCES

There are no other related appeals or interferences known to Appellants, Appellants' legal representative, or Appellants' assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF THE CLAIMS

Claims Pending:	2-15, 18, 20 and 22-24
Claims Canceled:	None
Claims Allowed:	None
Claims Withdrawn from Consideration:	None
Claims Appealed:	2-15, 18, 20 and 22-24

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IV. STATUS OF AMENDMENTS

No amendment has been filed subsequent to the outstanding final rejection.

V. SUMMARY OF THE INVENTION

The present invention is directed to a thermoplastic moulding composition consisting essentially of:

A) 40 to 99 parts by weight of at least one of aromatic polycarbonate and polyester carbonate;

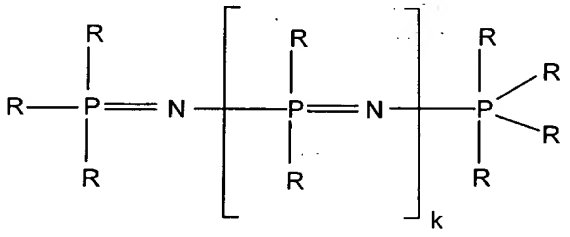
B) 0.5 to 60 parts by weight of graft polymer comprising,

B.1) 5 to 95 wt.% of one or more vinyl monomers, and

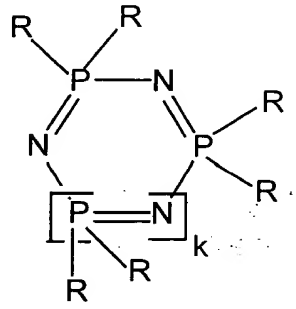
B.2) 95 to 5 wt.% of one or more grafting backbones having a glass transition temperature of <10°C;

C) 0 to 45 parts by weight of at least one thermoplastic polymer selected from at least one member of the group consisting of vinyl (co)polymers and polyalkylene terephthalates;

D) 0.1 to 50 parts by weight of at least one member selected from the group consisting of phosphazenes represented by the following formula (Ia) and phosphazenes represented by the following formula (Ib),



(Ia),



(Ib),

in which

R is in each case identical or different and denotes (i) at least one member selected from the group consisting of amino and C_1 to C_8 alkyl, in each case optionally halogenated; and (ii) at least one member selected from the group consisting of C_1 to C_8

alkoxy, C_5 to C_6 cycloalkyl, C_6 to C_{20} aryl and C_7 to C_{12} aralkyl, in each case optionally substituted by at least one member selected from the group consisting of alkyl and halogen, and

k denotes 0 or a number from 1 to 15;

E) 0.5 to 40 parts by weight of finely divided inorganic powder having an average particle diameter of less than or equal to 200 nm;

F) 0 to 5 parts by weight of fluorinated polyolefin; and

G) optionally at least one additive selected from the group consisting of lubricants, mould release agents, nucleating agents, antistatic agents, stabilisers, dyes and pigments.

VI. ISSUES

(I) Whether any of Claims 2-15, 18, 20, 22 and 23 are unpatentable under 35 U.S.C. §103(a) over European Patent Application No. EP 0 728 811 (**Maruyama et al**) in view of United States Patent No. 5,849,827 (**Bödiger et al**).

(II) Whether Claim 24 is patentable.

VII. GROUPING OF CLAIMS

Claims 2-15, 18, 20 and 22-24 are appealed together.

VIII. ARGUMENTS

(I) CLAIMS 2-15, 18, 20, 22 and 23 ARE NOT RENDERED OBVIOUS BY MARUYAMA ET AL IN VIEW OF BÖDIGER ET AL.

The Examiner has taken the position that, under 35 U.S.C. §103(a), Claims 2-15, 18, 20, 22 and 23 are unpatentable over Maruyama et al in view of Bödiger et al. Appellants respectfully disagree with regard to Claims 2-15, 18, 20, 22 and 23.

The thermoplastic molding composition of Appellants' claims consists essentially of: (A) an aromatic polycarbonate and/or polyester carbonate; (B) a graft polymer; (C) optionally a thermoplastic vinyl (co)polymer and/or polyalkylene terephthalate; (D) a phosphazene selected from those represented by formulas Ia and/or Ib (see Claim 2); (E) finely divided inorganic powder having an average particle diameter of less than or equal to 200 nm; (F) optionally a fluorinated polyolefin; and (G) optionally at least one additive, e.g., a lubricant and/or mold release agent.

The thermoplastic compositions according to Appellants' present claims provide a desirable combination of:

(i) excellent flame resistance; and

(ii) improved physical properties including, improved weld-line strength, notched impact strength and environmental stress cracking resistance.

Appellants wish to direct attention to the Examples, and in particular the Table on page 27, of the specification. Relative to comparative Example 1 (which does not contain particulate aluminum hydroxide), Examples 2 and 3 (according to the invention) provide a desirable combination of good flame resistance and improved mechanical strength. More particularly, Examples 2 and 3 have improved notched impact strength, softening point, weld line strength and environmental stress cracking resistance relative to the comparative composition of Example 1.

Maruyama et al disclose thermoplastic resin compositions comprising an aromatic polycarbonate, a graft copolymer and a phosphazene (abstract). The compositions of Maruyama et al are disclosed as optionally containing additives, including fillers, such as talc (page 5, lines 15-19). Maruyama et al do not disclose or suggest the particle size of the fillers that may optionally be present in their thermoplastic resin compositions. Appellants wish to point out that commercially available talc typically has an average particle size in excess of 200 nm. In particular, commercially available talcs typically have average particle size diameters (d_{50} values) of 0.5 μm (500 nm) to 8 μm (8000 nm). Commercial talc data sheets, in support of the preceding remarks, were previously submitted to the Office in an appendix to an amendment in the present case dated 1 October 2002.

Maruyama et al teaches away from the use of phosphorous compounds other than phosphazenes, such as phosphates (e.g., trixlenyl phosphate) and phosphoric esters (e.g., phosphoric ester oligomers). See the examples, and in particular page 6, line 51 through page 7, line 39, and Table 1 on page 8 of Maruyama et al. In addition, Maruyama et al disclose the undesirability of compositions containing flame retarding phosphorous compounds, in that they suffer from physical and processing problems, e.g., reduction in heat resistance and oozing of the phosphorous compounds (page 2, lines 27-30).

On page 2 of the Office Action of 20 November 2002 it is argued that Maruyama et al does not teach away from the use of non-phosphazene phosphorous compounds, in that Maruyama et al provide no indication that a blend of flame retardants or auxiliary flame retardant would be unwelcome. Appellants respectfully disagree. Maruyama et al provide no disclosure, suggestion or teaching as to a composition that includes a blend of phosphazenes and non-phosphazene phosphorous compounds. What Maruyama et al clearly shows and teaches is that their thermoplastic compositions which contain phosphazenes provide improved flame resistance relative to comparative compositions that contain non-phosphazene phosphorous compounds, such as trixylenyl phosphate. In addition, Maruyama et al describe compositions that contain nonphosphazene phosphorous compounds, such as phosphoric acid esters, as suffering from physical and processing problems, e.g., reduction in heat resistance and oozing of the phosphorous compounds.

Appellants respectfully submit that in light of what Maruyama et al actually discloses, one of ordinary skill in the art would be reasonably expected to interpret such disclosure as teaching away from the use of non-phosphazene phosphorous compounds. It is further submitted that, one of ordinary skill in the art would not reasonably be expected to interpret Maruyama et al's disclosure as representing in any way a suggestion to blend phosphazene and non-phosphazene phosphorous compounds.

Bödiger et al disclose a thermoplastic molding composition comprising aromatic polycarbonate; extremely finely divided inorganic powder, e.g., aluminum oxides and TiO_2, having a mean particle diameter of 0.1 to 100 nm; and a flame

retardant (abstract and column 7, lines 24-53). The phosphorous compounds of Bödiger et al are disclosed as preferably including those represented by formula (VIII) in column 8. However, Bödiger et al do not disclose or suggest the use of phosphazenes in their compositions.

It is argued on page 2 of the Office Action of 20 November 2002 that Bödiger et al discloses that finely divided filler improves the flame retardance of **all** (emphasis added) phosphorous compounds, and that such disclosure would lead one of ordinary skill in the art to use the extremely finely divided inorganic powder of Bödiger et al in the compositions of Maruyama et al, for the purpose of improving flame retardance. Appellants respectfully disagree. Bödiger et al's disclosure is in no way indicative or predictive of achieving improved flame resistance in phosphazene containing compositions. In fact, the examples of Appellants' present specification show that the flame resistance of a phosphazene containing composition is not measurably improved by the inclusion of finely divided inorganic powders therein. See the physical properties listed for comparative Example 1, and Examples 2 and 3 (according to the invention) in the table on page 27 of Appellants' specification. As such, Bödiger et al does not provide the requisite motivation to combine its disclosure with that of Maruyama et al.

Further, Bödiger et al do not disclose or suggest the use of phosphazenes in their compositions. Maruyama et al teach away from the use of phosphorous compounds other than phosphazenes, such as those phosphorous compounds disclosed by Bödiger et al and represented by their formula (VIII). As such neither Maruyama et al nor Bödiger et al provide the requisite teaching that would motivate one of ordinary skill in the art to combine their respective disclosures.

As the Court of Appeals for the Federal Circuit has stated, there are three possible sources for motivation to combine references in a manner that would render claims obvious. These are (1) the nature of the problem to be solved, (2) the teaching of the prior art, and (3) the knowledge of persons of ordinary skill in the art, In re Rouffet, 47 U.S.P.Q.2d 1453, 1458 (Fed. Cir. 1998). The nature of the problem to be solved and the knowledge of persons of ordinary skill in the art are not present here and have not been relied upon in the rejection. As for the teaching of the prior art, the above discussion has established that neither of the patents relied

upon in the rejection provide the requisite teaching, and certainly do not provide the motivation or suggestion to combine that is required by Court decisions.

Neither Maruyama et al nor Bödiger et al suggest the desirable combination of physical properties that are provided by the compositions of Appellants' claimed invention. As discussed previously herein, the thermoplastic compositions according to Appellants' present claims provide a desirable combination of: (i) excellent flame resistance; and (ii) improved physical properties including, improved weld-line strength, notched impact strength and environmental stress cracking resistance.

Whether a particular combination might be obvious to try is not a legitimate test of patentability. In re Fine, 837 F.2d 1071, 1075 (Fed. Cir. 1988). Obviousness is tested by what the combined teaching of the references would have suggested to those of ordinary skill in the art. Id. Obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Id. The teachings of references can be combined only if there is some suggestion or incentive to do so. Id. In light of the remarks herein, neither Maruyama et al nor Bödiger et al are deemed to provide the requisite suggestion or incentive to combine their respective disclosures.

Even if Maruyama et al and Bödiger et al were combined, such a combination would not result in the thermoplastic molding composition of Appellants' present claims. The combination of Maruyama et al and Bödiger et al would result in a composition containing both phosphazenes and non-phosphazene phosphorous compounds. The thermoplastic composition of Appellants' present claims include closed-end transitional language, and as such is exclusive of effective amounts of non-phosphazene phosphorous compounds.

It is respectfully submitted that the rejection impermissibly uses Appellants' application as a blueprint for selecting and combining or modifying the prior art to arrive at Appellants' claimed invention, thereby making use of prohibited hindsight in the selection and application of that prior art. The use of hindsight reconstruction of an invention is an inappropriate process by which to determine patentability, In re Rouffet, 47 USPQ 2d 1453, 1457 (Fed. Cir. 1998). To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or

references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." In re Fine, 837 F.2d at 1075. It is essential that the decision maker forget what he or she has been taught at trial about the claimed invention and cast the mind back to the time the invention was made ... to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art. Id. One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. Id.

In light of the preceding remarks, Appellants' Claims 2-15, 18, 20, 22 and 23 are deemed to be patentable over Maruyama et al in view of Bödiger et al.

(II) CLAIM 24 IS PATENTABLE.

Claim 24, which depends from Claim 2 (the broadest independent claim in the present case), does not stand rejected in the Office Action of 20 November 2002. Claim 24 was added in Appellants' amendment dated 1 October 2002. Claim 24 is deemed by Appellants to be allowable.

In view of the remarks herein, Appellants' respectfully submit that their claimed thermoplastic molding composition is not described, taught or fairly suggested by Maruyama et al in view of Bödiger et al. Thus, Appellants respectfully request that the Board of Appeals reverse the decision of the Examiner, and remand the application for allowance of Claims 2-15, 18, 20 and 22-24, and issuance of a patent.

Respectfully submitted,

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APPENDIX

CLAIMS ON APPEAL

2. A thermoplastic moulding composition consisting essentially of:

A) 40 to 99 parts by weight of at least one of aromatic polycarbonate and polyester carbonate;

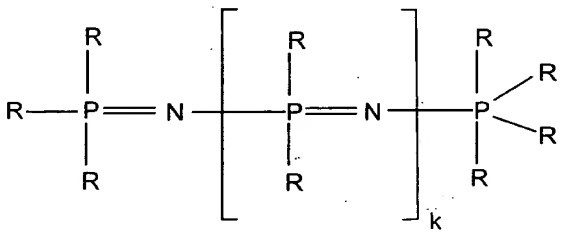
B) 0.5 to 60 parts by weight of graft polymer comprising,

B.1) 5 to 95 wt.% of one or more vinyl monomers, and

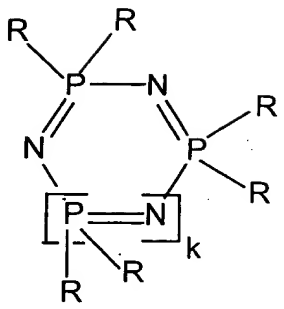
B.2) 95 to 5 wt.% of one or more grafting backbones having a glass transition temperature of <10°C;

C) 0 to 45 parts by weight of at least one thermoplastic polymer selected from at least one member of the group consisting of vinyl (co)polymers and polyalkylene terephthalates;

D) 0.1 to 50 parts by weight of at least one member selected from the group consisting of phosphazenes represented by the following formula (Ia) and phosphazenes represented by the following formula (Ib),



(Ia),



(Ib),

in which

R is in each case identical or different and denotes (i) at least one member selected from the group consisting of amino and C_1 to C_8 alkyl, in each case optionally halogenated; and (ii) at least one member selected from the group consisting of C_1 to C_8 alkoxy, C_5 to C_6 cycloalkyl, C_6 to C_{20} aryl and C_7 to C_{12} aralkyl, in each case optionally substituted by at least one member selected from the group consisting of alkyl and halogen, and

k denotes 0 or a number from 1 to 15;

E) 0.5 to 40 parts by weight of finely divided inorganic powder having an average particle diameter of less than or equal to 200 nm;

G) 0 to 5 parts by weight of fluorinated polyolefin; and

G) optionally at least one additive selected from the group consisting of lubricants, mould release agents, nucleating agents, antistatic agents, stabilisers, dyes and pigments.

3. Moulding compositions according to Claim 2 containing

60 to 98.5 parts by weight of A,
1 to 40 parts by weight of B,
0 to 30 parts by weight of C,

1 to 18 parts by weight of D,

1 to 25 parts by weight of E,

0.15 to 1 part by weight of F.

4. Moulding compositions according to Claim 2 containing 2 to 25 parts by weight of C.

5. Moulding compositions according to Claim 2 containing 5 to 25 parts by weight of D.

6. The moulding composition of Claim 2, wherein vinyl monomers B.1 are mixtures prepared from

B.1.1 50 to 99 parts by weight of at least one member selected from the group consisting of vinyl aromatics, ring-substituted vinyl aromatics and methacrylic acid (C_1-C_8)-alkyl esters, and

B.1.2 1 to 50 parts by weight of at least one member selected from the group consisting of vinyl cyanides, (meth)acrylic acid (C_1-C_8)-alkyl esters, anhydrides of unsaturated carboxylic acids and imides of unsaturated carboxylic acids.

7. The moulding composition of Claim 2, wherein the grafting backbone B.2) is a rubber selected from at least one member of the group consisting of diene rubbers, EP(D)M rubbers, acrylate, polyurethane, silicone, chloroprene and ethylene/vinyl acetate rubbers.

8. The moulding composition of Claim 2, wherein component D is selected from the group consisting of propoxyphosphazene, phenoxyphosphazene, methylphenoxyphosphazene, aminophosphazene and fluoroalkylphosphazenes.

9. The moulding composition of Claim 2, wherein component E is at least one polar compound selected from the group consisting of one or more metals of main groups 1 to 5 and one or more metals of subgroups 1 to 8 of the periodic system, with at least one element selected from the group consisting of oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen and silicon.

10. The moulding composition of Claim 9, wherein component E is at least one polar compound selected from the group consisting of one or more metals of main groups 2 to 5 and one or more metals of subgroups 4 to 8 of the periodic system, with at least one element selected from the group consisting of oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen and silicon.

11. The moulding composition of Claim 10, wherein component E is at least one polar compound selected from the group consisting of one or more metals of main groups 3 to 5 and one or more metals of subgroups 4 to 8 of the periodic system, with at least one element selected from the group consisting of oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen and silicon.

12. The moulding composition of Claim 2, wherein component E is at least one member selected from the group consisting of oxide, hydroxide, hydrous oxide, sulfate, sulfite, sulfide, carbonate, carbide, nitrate, nitrite, nitride, borate, silicate, phosphate, hydride, phosphite and phosphonate.

13. The moulding composition of Claim 2, wherein component E is selected from the group consisting of oxides, phosphates and hydroxides.

14. The moulding composition of Claim 13, wherein component E is selected from the group consisting of TiO_2, SiO_2, SnO_2, ZnO, ZnS, boehmite, ZrO_2, Al_2O_3, aluminum phosphates, iron oxides, TiN, WC, AlO(OH), Sb_2O_3, Na_2SO_4, vanadium oxides, zinc borate, silicates, doped compounds and mixtures thereof.

15. The moulding composition of Claim 2, wherein component E is selected from the group consisting of hydrated aluminum oxides, TiO_2 and mixtures thereof.

18. Process for the production of moulding compositions according to Claim 2, wherein components A to E and optionally further additives are mixed and melt-compounded.

20. Mouldings produced from moulding compositions according to Claim 1.

22. A molded article comprising the composition of Claim 2.

23. The molding composition of Claim 14 wherein said silicates are selected from at least one member of the group consisting of Al silicates, Mg silicates, 1-dimensional silicates, 2-dimensional silicates and 3-dimensional silicates.

24. The moulding composition of Claim 2 wherein component E is AlO(OH).